

Single-nest brood overlapping in the Galah in the Hunter Region, New South Wales

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Received 14 September 2023, accepted 23 September 2023, published online 29 September 2023.

INTRODUCTION

The Galah *Eolophus roseicapillus* is a common parrot found in open habitats over much of Australia (Australian Museum 2021). It is a seasonal breeder that lays clutches from late July or early August to early November (Higgins 1999). It mostly uses hollows in *Eucalyptus* spp. and uses the same hollow in successive years (Rowley 1990). The average clutch size is 4.3 eggs (range 2-8) and the median incubation period is 23.4 days (Rowley 1990). The mean nestling period is 49.4 days (range 45.6-59.1) (Rowley 1990) to 52 days (range 45-62) (Smith & Saunders 1986).

Brood overlapping occurs when birds begin a second clutch while their first brood still depends on them (Blomqvist *et al.* 2001; Burley 1980; Hill 1986; Surmackie & Podkowa 2022; Wiggins *et al.* 1984). It is rare when it involves a single nest and the second clutch is laid before the first brood fledges. This single-nest brood overlapping usually occurs in nest boxes (Surmackie & Podkowa 2022). Galahs may begin a replacement clutch 12-18 days after the failure of eggs or small young. McGilp (1923) stated that Galahs have at least two broods in good years but Rowley (1990) disagreed.

This note describes two successive clutches that were invested-in simultaneously in the same nest box at Thornton (32°24'S 150°38'E), New South Wales.

METHODS

On 31 July 2022, a nest box containing eucalyptus leaves treated with lice and mite spray was installed 5.5 m above the ground on a steel pole in our backyard. It was located beside a *Eucalyptus* sp. (approximately 21 m tall) and above an understorey of native shrubs: *Callistemon* spp., *Banksia* spp. and *Grevillea* spp. A custom-made camera was mounted in the ceiling of the nest box allowing the eggs and young to be viewed opportunistically.

RESULTS

The observations of the breeding event are summarised in **Table 1**.

Table 1. Opportunistic observations of Galah breeding in a nest box in a suburban backyard in the Hunter Valley in 2022

Date (2022)	Observation
31 July	Nest box was installed; adult birds mated on the nest box roof
10 August	No eggs were in the nest box
29 August	First clutch: at least two eggs had been laid (partially covered by leaves)
16 September	First brood: three small young had hatched
24 September	Only one young remained, Chick 1/2022
13 November a.m.	Parents were in the nest box with Chick 1/2022. Female was very still with head down. Male was arranging leaves.
13 November p.m.	Second clutch: Two eggs had been laid. Chick 1/2022 was still in the nest box (Figure 1).
16 November	Second clutch: Three eggs had been laid. Chick 1/2022 was still in the nest box (Figure 2).
18 November p.m.	Chick 1/2022 was asleep in the nest box (Figure 3).
19 November a.m.	Chick 1/2022 was no longer in the nest box and had presumably fledged.
29 November	Second clutch: Four eggs had been laid.
11 December	Second brood: One small young from the new clutch had hatched.
January 2023	No surviving young were observed in the nest box.

On 13 November, the beginning of a second clutch (two eggs) was discovered in the nest box with the sole surviving young from the first clutch, Chick 1/2022, who was at least 58 days old (**Figure 1**).

On 16 November, the second clutch contained three eggs (**Figure 2**). On 18 November, Chick 1/2022 was still in the nest box (**Figure 3**) but on 19 November, Chick 1/2022, who was at least 64 days old, was gone. At least one young from the second clutch hatched but the nesting was unsuccessful.



Figure 1. The sole surviving young from the first clutch, Chick 1/2022, is inspecting two eggs from the second clutch on 13 November 2022.



Figure 2. Chick 1/2022 is sitting beside three eggs from the second clutch on 16 November 2022.



Figure 3. Chick 1/2022 is sleeping beside three eggs (partially covered with leaves in the nest bowl) from the second clutch on 18 November 2022. A parent is blocking the entrance to the nest box.

DISCUSSION

This appears to be the first report that provides evidence of Galahs laying a second clutch while caring for a large unfledged young. Previous reports provide evidence of Galahs re-nesting only after failure of a clutch or brood (Rowley 1990; Smith & Saunders 1986).

In the present study, a second clutch may have been laid because the adults sensed that the sole surviving young from the first clutch was unlikely to fledge. The young was near the maximum nestling age (at least 58 days old) (Rowley 1990; Smith & Saunders 1986) when the first two eggs of the second clutch were discovered. It had not been observed climbing the internal ladder or looking out of the nest box, which were expected milestones for its age (Pryor pers. obs.). However, it presumably fledged (not observed) when it was at least 64 days old, which was older than the maximum reported nestling age (Rowley 1990; Smith & Saunders 1986).

The second clutch may have been started before Chick 1/2022 fledged because the length of the breeding season was a constraint. Seasonal breeders have a certain amount of time available for breeding and some may be able to rear a second brood only if they overlap successive clutches (Hill 1986). Some birds that lay eggs early in the breeding season are more likely to overlap successive clutches (Hill 1986; Wiggins *et al.* 1984). However, these findings contrast with the observation on 10 August that the Galahs had not started laying eggs.

These Galah parents may have carried out this rare behaviour because they were experienced breeders that were capable of producing a second clutch quickly and raising more young (Blomqvist *et al.* 2001). A pair have bred in a nest box in our backyard for five consecutive breeding seasons, including 2022. The Galah is a long-lived and monogamous species (Higgins 1999) and pairs have time to become efficient in breeding (Burley 1980). In addition, because the male and female incubate the eggs and provision the young, they can potentially take on different roles to provide different kinds of care for young of different developmental phases (Burley 1980).

A cue may have stimulated the Galahs to re-nest at an inappropriate time (Wiggins *et al.* 1984). One cue may have been the loss of most of the first brood. Some bird species lay second clutches more quickly when they lose most of their first brood soon after hatching (Blomqvist *et al.* 2001; Parish *et al.* 1997). Another cue may have been the

abundance of food. The year 2022 was warmer and wetter than average, with a third successive La Niña becoming established by early September (Bureau of Meteorology 2023). It provided conditions that promoted widespread growth and seeding of grasses and other plants that Galahs feed on. Similar to these observations of Galahs, Wiggins *et al.* (1984) found that Common Tern *Sterna hirundo* that laid a second clutch before the first brood fledged had lost one or two chicks and were raising only one chick when food abundance allowed the successful raising of two to three chicks.

The brood overlapping described in this note did not improve the reproductive success of the Galah pair because the second brood failed. Young in the second brood may have died for the same (unknown) reasons that two young in the first brood died. Alternatively, the adults may have concentrated their parental care on the fledged, still-dependent Chick 1/2022 and may have not provided optimal care to young in the second brood. These observations are similar to those reported in other studies (Surmackie & Podkowa 2022; Wiggins *et al.* 1984).

CONCLUSIONS

The Galah may (rarely) re-nest before its dependent young fledge, especially if the first brood has a low survival rate but is not known to successfully fledge chicks from two broods in a single breeding season.

ACKNOWLEDGEMENTS

I am grateful to Nick Milton for building and installing the nest box and camera and for taking the photographs.

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